

REMARKS

Claims 1-15 and 17-57 are currently pending. Claims 30-32 have been withdrawn as directed to a non-elected invention. Applicants reserve the right to file one or more divisional applications directed to the non-elected subject matter. No claims have been amended herein. Applicants respectfully request reconsideration and allowance of all pending claims.

Rejection of the Claims Under 35 U.S.C. § 103(a)

Reconsideration is requested of the rejection of claims 1-15, 17-29 and 33-57 under 35 U.S.C. § 103(a) as being unpatentable over Wu, et al. (WO 02/42365) ¹ in view of Hale, et al. (U.S. 2003/0039851) and further in view of Nakai, et al. (U.S. 6,686,044).

Claim 1 is directed to an absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film. The film comprises filler particles, a polyfunctional branching agent, and a copolyester comprising from about 10 mole% to about 30 mole% of aromatic dicarboxylic acid or ester thereof, from about 20 mole% to about 40 mole% of aliphatic dicarboxylic acid or ester thereof, from about 30 mole% to about 60 mole% dihydric alcohol, and wherein the weight average molecular weight of the

¹ Applicants note that page 3 of the current Office action states that claims 1-15, 17-29, and 33-57 are rejected over Wu, et al. (WO 02/23465) in view of Hale, et al. and further in view of Nakai, et al. However, WO 02/23465 is actually not Wu, but rather is Buescher, and is entitled Synchronizing Sample Timing in an RFID receiver. Applicants assume the Office intended to base the rejection of claims 1-15, 17-29, and 33-57 on Wu (WO 02/42365), as listed in the Notice of References Cited.

copolyester is from about 90,000 to about 160,000 Daltons, and wherein the number average molecular weight of the copolyester is from about 35,000 to about 70,000 Daltons, wherein the glass transition temperature of the copolyester is less than about 0°C, wherein the filler particles are coated up to 2% by weight with a fatty acid, and wherein the fatty acid is behenic acid.

Wu, et al. is directed to biodegradable films that are permeable to moisture vapor and air. The films have a moisture vapor transmission rate of from about 1000 to about 4500 g/m²/day. The films comprise a blend of from about 40% to about 75% by weight of a biodegradable thermoplastic polymer and about 25% to about 60% by weight of inorganic filler particles. The film is stretched at ambient temperature to produce microvoids in the film. The filler particles may be calcium carbonate, zeolite, silica, etc. Suitable biodegradable polymers include polyesters such as aliphatic-aromatic copolyesters such as those described in WO 98/23673. The thermoplastic copolyester may comprise at least one aliphatic dicarboxylic acid such as adipic acid, at least one aliphatic diol such as 1,4-butanediol, and at least one aromatic dicarboxylic acid such as terephthalic acid. The films may be used in diapers, training pants, catamenial pads, and the like.

Significantly, however, as recognized by the Office, Wu, et al. fail to disclose or suggest a biodegradable, stretched aliphatic-aromatic copolyester film comprising aliphatic-aromatic copolyesters that have a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000

Daltons, and a glass transition temperature of less than about 0°C, and filler particles that are coated up to 2% by weight with a fatty acid, wherein the fatty acid is behenic acid.

Hale, et al. is directed to multilayer films comprising a layer of a thermoplastic polymer such as an aliphatic-aromatic copolyester (AAPE). The AAPEs may be comprised of diols and diacids. In one preferred embodiment, the AAPE comprises about 30 to about 75 mole % of adipic acid, about 25 to about 70 mole % terephthalic acid, about 90 to 100 mole % 1,4-butanediol, and 0 to about 10 mole % of modifying diol, based on 100 mole percent of a diacid component and 100 mole percent of a diol component. The AAPE may optionally comprise from about 0.01 to about 10 wt.% of a branching agent, and from 0 to about 80 percent by weight of a filler. The filler may be calcium carbonate optionally coated with a fatty acid, such as a calcium carbonate supplied by English China Clay under the registered trademark SUPERCOAT calcium carbonate, reported as including 0.5% acid insolubles.² The multilayer film in stretched form has a moisture vapor transmission rate of at least 300 g- μ m/m²-hour (or g-mil/m²-day), and preferably greater than about 500 to about 10,000 g- μ m/m²-hour. The AAPE may be formulated into multilayer films and incorporated into articles such as diapers.

Significantly, similar to Wu, et al., Hale, et al. fail to disclose a biodegradable, stretched aliphatic-aromatic copolyester film comprising a copolyester having Applicants' claimed amounts of aromatic dicarboxylic acid, aliphatic dicarboxylic acid, and dihydric alcohol, wherein the copolyester

has a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C. Further, Hale, et al. fail to disclose filler particles that are coated up to 2% by weight with a fatty acid, wherein the fatty acid is behenic acid.

Recognizing that Wu, et al. and Hale, et al. fail to teach or suggest each and every limitation of claim 1, the Office attempts to combine the Nakai, et al. reference with Wu, et al. and Hale, et al. Nakai, et al. disclose an adhesive containing surface-coated calcium carbonate particles having two coating layers. The surface-coated calcium carbonate particles are formed by first coating the surface of the calcium carbonate particles with a fatty acid mixture and then further coating the particles with a specific organic compound to form a second coating layer. Significantly, however, Nakai, et al. fail to disclose or suggest a biodegradable, stretched aliphatic-aromatic copolyester film comprising aliphatic-aromatic copolyesters that have a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C, and filler particles that are coated up to 2% by weight with a fatty acid, wherein the fatty acid is behenic acid.

In order for the Office to show a *prima facie* case of obviousness, M.P.E.P. § 2142 requires a clear articulation of the reasons why the claimed invention would have been obvious.

² See data sheet for SUPERCOAT® particles supplied by the Office.

Specifically, the Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 418, 82 USPQ2d 1385, 1396 (2007), 2007 WL 1237837, noted that the burden lies initially with the Office to provide an explicit analysis supporting a rejection under 35 U.S.C. 103. "[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."³ The Court in *KSR International* further identified a number of rationales to support a conclusion of obviousness which are consistent with the proper "functional approach" to the determination of obviousness as laid down in *Graham v. John Deere Co.* (383 U.S. 1, 148 USPQ 459 (1966)). Specifically, as previously required by the TSM (teaching, suggestion, motivation) approach to obviousness, one exemplary rationale indicated requires some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Specifically, to reject a claim based on this rationale, the Office must articulate the following: (1) a finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings to arrive at each and every limitation of the claimed invention; (2) a finding that there was reasonable expectation of success; and (3)

³ *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006).

whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness. The Office has failed to meet its burden under number (1) above, as the cited references fail to show each and every limitation of Applicants' invention and there is no apparent reason for one skilled in the art to modify the references to arrive at each and every limitation. It simply would not have been obvious to one skilled in the art to arrive at Applicants' claimed combinations.

Specifically, as noted above, none of the cited references, alone or in combination, teach or suggest an absorbent article comprising a laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film comprising a copolyester having a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C.

With regard to weight average molecular weight, number average molecular weight, and glass transition temperature, the Office has maintained the position that the copolyesters described in Wu, et al. inherently have weight average molecular weights, number average molecular weights, and glass transition temperatures that fall within Applicants' claimed ranges. The Office bases this position on the statement in Wu, et al. that the polyesters used therein can be aliphatic-aromatic copolyesters as described in Brink (WO 98/23673), and that such

copolyester films have a composition substantially identical to that claimed by Applicants.

Brink is directed to compositions and films comprising thermoplastic elastomers having a moisture vapor transmission rate of at least 200 g mil/m² day and microporous inorganic fillers. The compositions preferably comprise from about 15% to about 60% by weight of the microporous inorganic filler. The thermoplastic elastomers may be polymerization products of at least one aromatic dicarboxylic acid and/or at least one aliphatic dicarboxylic acid, and at least one diol. The aromatic and/or aliphatic dicarboxylic acids make up 100 mole% of the copolyesters, and the diols make up 100 mole% of the copolyesters, based on a total monomer content of 200 mole%. In one particular embodiment, the copolyesters may be prepared from glutaric acid (30-65 mole%); diglycolic acid (0-10 mole%); terephthalic acid (25-60 mole%); and 1,4-butanediol (100 mole%), based on a total mole% of dicarboxylic acid and diol of 200%.

Significantly, nowhere in Brink are aliphatic-aromatic copolyesters having a weight average molecular weight of from about 90,000 to about 160,000 Daltons, a number average molecular weight of from about 35,000 to about 70,000 Daltons, and a glass transition temperature of less than about 0°C disclosed or suggested. Furthermore, as Applicants argued in previously submitted Amendment C, submitted October 7, 2009, Applicants disagree with the Office's position that Applicants' claimed number average molecular weights, weight average molecular weights, and glass transition temperatures would be inherent from the copolyesters of Wu, et al. and/or Brink, since

the composition of the Wu, et al. and/or Brink copolyesters is similar to Applicants' claimed copolyesters. While the argument previously presented is not reiterated in its entirety, Applicants have repeated the main points of their argument for the Office's convenience.

The Office concludes that since the ranges regarding weight percent are met, the limitation of glass transition (and molecular weights) will also be met. Applicants respectfully disagree, however, and submit that a mere showing that the disclosed ranges for components of a prior art film may overlap the claimed ranges of the instantly claimed film components is not sufficient to show that the film of the prior art would inherently (i.e., necessarily), have Applicants' claimed molecular weights and glass transition temperature. Specifically, in this case, Applicants submit that although the ranges in Wu, et al. by reference to Brink for an aromatic and aliphatic dicarboxylic acid may overlap with Applicants' claimed ranges, the ranges are not identical. Thus it is possible that a copolyester film of Wu, et al. by reference to Brink could have an amount of either an aromatic or aliphatic dicarboxylic acid that is outside the range claimed by Applicants. For example, as noted by the Office, the film of Wu, et al. (when converted from mol% based upon 200% total) includes 2.5-30 mol% of aromatic dicarboxylic acid or ester thereof. Although Applicants acknowledge that this range overlaps Applicants' claimed range of 10-30 mol%, Applicants further submit that a portion of the range set forth by Wu, et al. is outside Applicants' claimed range (i.e., from 2.5-10 mol%). As such, it is possible for a film of Wu, et al. to include an aromatic

dicarboxylic acid in an amount that is less than that required by Applicants' claimed film. In such a case, the film of Wu, et al. would not have an identical composition of Applicants' claimed film, and thus, the film of Wu, et al. would not necessarily, or inherently, have the properties of Applicants' claimed film.

Furthermore, Applicants note that the molecular weight and glass transition temperature of a copolyester is not always correlated with a particular mole% breakdown of the components of the copolyester. In particular, copolyesters having the same breakdown of components by mole% will not necessarily have the same number average molecular weight, weight average molecular weight, and glass transition temperature. This has been previously discussed and specifically illustrated in the Response After RCE filed on December 28, 2006 and Amendment B filed on April 27, 2009, to which Applicants again refer the Office. Additionally, Applicants note that polymer molecules, even those of the same type of polymer, come in different sizes. As such, polymers of the same type of material may in fact have different weight average molecular weights and/or number average molecular weights, depending on the size of the polymer molecules.

With regard to the limitation of the filler particles coated with behenic acid, the Office attempts to argue that Nakai, et al. disclose surface-coated calcium carbonate particles substantially identical to those disclosed by Wu, et al. and Hale, et al. The Office states that it would have been obvious to one of ordinary skill in the art to modify the film

disclosed by Wu, et al. by replacing the calcium carbonate filler particles with the fatty-acid-coated filler particles disclosed by Nakai, et al. to impart viscosity stability to the film. Significantly, however, the particles disclosed by Nakai, et al. are not substantially identical to those disclosed by Wu, et al. and Hale, et al. Specifically, the particles disclosed by Nakai, et al. are surface-coated calcium carbonate particles having two coating layers. The surface-coated calcium carbonate particles of Nakai, et al. are formed by first coating the surface of the calcium carbonate particles with a fatty acid mixture and then further coating the particles with a specific organic compound to form a second coating layer. Further, Nakai, et al. disclose that it is **essential** to use a combination of fatty acid mixture and the specifically disclosed organic compound to form two coating layers on the particles to impart desired properties.⁴ Furthermore, Nakai, et al. disclose that an adhesive containing calcium carbonate particles whose surface is coated with either a fatty acid mixture or a specific organic compound alone, has inferior properties.⁵ Thus, it would not have been obvious to one skilled in the art to modify the teachings of Wu, et al. (and/or Brink) and Hale, et al. by replacing the calcium carbonate filler particles with the fatty-acid-coated filler particles disclosed by Nakai, et al. to impart viscosity stability to the film of claim 1. That is, one skilled in the art would not reasonably believe it would be beneficial to pick one coating of the particle of Nakai, et al., which specifically teaches the necessity of two coatings, to

⁴ Nakai, et al. column 5, lines 65-67.

modify the particle of Wu, et al. and/or Hale, et al. Thus, there is simply no apparent reason for one skilled in the art to combine the teachings of Wu, et al., Hale, et al., and Nakai, et al. as suggested by the Office.

In light of the foregoing, Applicants submit that claim 1 is patentable over the cited references. Claims 2-15, 17-29, and 33-53 depend directly or indirectly from claim 1 and are thus patentable for the same reasons as set forth above for claim 1 as well as for the additional elements they require.

Additionally, with regard to dependent claims 33-36, 41-46, and 50-52, the Office has stated that properties such as hydrostatic pressure resistance (claims 33-36), modulus of elasticity (claims 41-43), % strain in the machine direction (claims 44-46), and break stress (claims 50-52) are inherent properties of the films of Wu, et al., based on the disclosure of Brink. Applicants respectfully disagree.

Initially, it should be recognized that properties such as hydrostatic pressure resistance, modulus of elasticity, % strain in the machine direction, and break stress are not determined solely by the mole % breakdown of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohols in the copolyester. Rather, these properties are affected not only by mole% breakdown of components but also by factors such as the size and amount of filler particles in the film, the number average molecular weight of the copolyester, the weight average molecular weight of the copolyester, and the glass transition

⁵ Id. column 5, line 67 to column 6, lines 1-3.

temperature of the copolyester. For instance, ¶37 of the specification states that weight average molecular weight and number average molecular weight have an effect on the tensile strength of copolyesters. In particular, if the molecular weight numbers are too small, the copolyester will be too tacky and have too low of a tensile strength. If the molecular weight numbers are too high, various processing issues are encountered. Additionally, as described in ¶39 of the specification, the glass transition temperature of the copolyester affects the flexibility characteristics of the copolyesters.

As further support for this, Applicants refer to the Examples of the present invention. In particular, the Examples describe the preparation of stretched aliphatic-aromatic copolyester films using two commercially available aliphatic-aromatic copolyester resins as starting materials (i.e., Ecoflex F BX 7011 aliphatic-aromatic copolyester and EnPol G8060 M aliphatic-aromatic copolyester).⁶ The films prepared using the Ecoflex and EnPol resins both had mole% breakdown of components that fell within the ranges set forth in Applicants' claim 1. Stretched films prepared using various amounts of filler particles were then tested for hydrostatic pressure resistance (Example 4), water vapor transmission rates (Example 5), and tensile strengths (e.g., % strain in the machine direction and % strain in the cross direction) (Example 6).

As can be seen from the results of these tests, the various stretched films prepared with the Ecoflex or EnPol resins did

⁶ Example 1 describes preparation of precursor films, and Example 3 describes stretching the films of Example 1.

not have the same hydrostatic pressure resistance, water vapor transmission rate, and tensile strength measurements, despite all having a mole% breakdown of components that fell within the ranges set forth in claim 1, thus illustrating that copolyesters that have a mole% breakdown of components that fall within the ranges set forth in claim 1 will not inherently have the same values for these properties. Consequently, it cannot be assumed that the films of Wu, et al. (and/or Brink) or Hale, et al. will inherently have the same hydrostatic pressure resistance, modulus of elasticity, % strain in the machine direction, and break stress, simply because they have similar mole % breakdown of aliphatic dicarboxylic acids, aromatic dicarboxylic acids, and dihydric alcohols, as set forth in Applicants' claims.

Further, the Office states that the Examples are not commensurate in scope with the claims and that the claims all recited claim ranges and not absolute values for all properties recited. The Office thus concludes that "if a composition for a film such as the one disclosed by Wu with reference to Brink meets the claim range limitations for amounts of its components, the composition will necessarily meet the claim range limitations for the recited properties because those properties are inherent to the composition or range of compositions." (Emphasis added). Applicants respectfully disagree. Initially, Applicants note that the Example set forth in the instant specification and discussed above was not included in Applicants' previous response to illustrate the properties of every combination possible over the claimed ranges of the components in Applicants' claimed copolyester film. Rather, the Example was discussed merely to illustrate that copolyesters

that have a mole% breakdown of components that fall within the ranges set forth in claim 1 will not necessarily, or inherently, have the same values for these properties. Further, as noted above, Applicants submit that although the ranges in Wu by reference to Brink for an aromatic and aliphatic dicarboxylic acid may overlap with Applicants' claimed ranges, the ranges are not identical. Thus, it is possible that a copolyester film of Wu, et al. by reference to Brink could have an amount of either an aromatic or aliphatic dicarboxylic acid that is outside the range claimed by Applicants. In such a case, as the film of Wu, et al. would not have an identical composition of Applicants' claimed film, the film of Wu, et al. would not necessarily, or inherently, have the properties of Applicants' claimed film.

Claims 33-36, 41-46, and 50-52 are thus patentable over the cited references for this additional reason.

Additionally, with regard to claims 44-46, Applicants note that the Examples of Wu, et al. give a percent machine direction elongation at break for the films tested therein. In particular, the values given in the table on page 19 are well above the values set forth in Applicants' claims 44-46. Specifically, the percent machine direction elongation at break for the films disclosed in Wu, et al. are 707% and 494%, whereas Applicants' claims 44-46 require the film to be able to be stretched in the machine direction and not break until from about 15% strain to about 100% strain, from about 20% strain to about 60% strain, and from about 30% strain to about 50% strain, respectively. Claims 44-46 are thus patentable for this additional reason.

Claim 54 is directed to an absorbent article comprising a laminated outer cover, the laminated outer cover comprising a biodegradable stretched aliphatic-aromatic copolyester film. The film comprises filler particles, a polyfunctional branching agent, and a copolyester comprising from about 10 mole% to about 30 mole% terephthalic acid, from about 20 mole% to about 40 mole% adipic acid, from about 30 mole% to about 60 mole% 1,4-butanediol, and wherein the copolyester has a weight average molecular weight of from about 90,000 to about 160,000 Daltons and a number average molecular weight of from about 35,000 to about 70,000 Daltons, and wherein the glass transition temperature of the copolyester is less than about 0°C, wherein the filler particles are coated up to 2% by weight with a fatty acid, and wherein the fatty acid is behenic acid.

Claim 54 is patentable for the same reasons as set forth above for claim 1. Claims 55-57 depend directly or indirectly from claim 54 and are thus patentable for the same reasons as set forth above for claim 54 as well as for the additional elements they require.

CONCLUSION

In light of the foregoing, Applicants request reconsideration of the rejection of claims 1-15, 17-29, and 33-57 and allowance of all pending claims. The Commissioner is hereby authorized to charge any fees which may be required to Deposit Account No. 01-2384.

Respectfully submitted,

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